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IS 508 (1987): grease, graphited [PCD 3: Petroleum, Lubricants and their Related Products]



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Indian Standard
**SPECIFICATION FOR
GREASE, GRAPHITED**
(Fourth Revision)

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Indian Standard

SPECIFICATION FOR GREASE, GRAPHITED

(*Fourth Revision*)

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Indian Standard
**SPECIFICATION FOR
GREASE, GRAPHITED**
(*Fourth Revision*)

0. FOREWORD

0.1 This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards on 5 October 1987, after the draft finalized by the Lubricants and Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was first published in 1963 and subsequently revised in 1965, 1973 and 1981. This revision has been prepared as a result of review of the standard by Greases Subcommittee, in the light of the present day requirements and advancement in the field of lubrication technology in the country. In order to take care of defence requirement, it was decided by the committee to include a separate grade in the standard exactly meeting their requirements. Hence in this revision, one more grade namely, Grade 2 has been included to take care of the defence needs.

0.3 While preparing this specification, considerable assistance has been taken from the following standard published by the Ministry of Defence, U.K.

Specification CS/653 Grease XG-280.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for grease, graphited used for general service under comparatively high load, low speed or low relative displacement of inter-acting surfaces requiring lubrication.

1.2 Greases covered in this standard are not intended to be used in ball and roller bearings.

2. GRADES

2.1 The following three grades of graphited greases are covered in this standard and these may be used for hydraulic rams, plungers, slides, elevator cables, leaf springs, lift guides, pantograph pans, cam and cam dog surfaces in brake control valves of diesel locomotives and as protective for steel wire ropes and certain anti-seize purposes, in temperate and tropical climates:

- a) Grade 1,
- b) Grade 2, and
- c) Grade 3.

3. REQUIREMENTS

3.1 General — The material shall be a smooth and homogenous preparation, uniform in consistency and free from objectionable odour, deleterious materials and impurities, such as rosin, rosinsates, tar oil and fillers other than graphite. It shall not show any sign of breakdown, hardening or tendency of the constituents to separate.

3.2 Composition — The material shall be prepared from the following ingredients of such proportions as to comply with the requirements prescribed in Table 1.

- a) The mineral lubricating oil extracted from the grease by method 'A' prescribed in P : 59 (1984) of IS: 1448* shall comply with the following requirements:

Characteristic	Requirement			Method of Test Ref to (P : or IS : 1448*) P : 25
	Grade 1 61·2 to 74·8	Grade 2 110, Min	Grade 3 61·2 to 74·8	
i) Kinematic viscosity in CST, at 40°C				
ii) Flash point, °C, Min	160	175	160	P : 69

*Methods of test for petroleum and its products.

- b) Generally calcium based soap; and
c) Graphite conforming to IS : 495-1967*.

3.3 The material shall also comply with the requirements prescribed in Table 1, when tested according to the methods prescribed under 'P' series of IS : 1448†. Reference to relevant test method is given in col 6 of Table 1.

TABLE 1 REQUIREMENTS FOR GREASE, GRAPHITED

SL No.	CHARACTERISTIC	(Clauses 3.2 and 3.3) REQUIREMENT FOR			METHOD OF TEST REF TO (P :) OF IS : 1448*
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Penetration of worked material at $25 \pm 0.5^\circ\text{C}$ (60 double strokes)	310 to 340	265 to 295	175 to 205	P : 60
ii)	Graphite content, percent by mass	6 to 15	4.5 to 5.5	45 to 55	P : 58
iii)	Drop point, $^\circ\text{C}$, <i>Min</i>	95	100	95	P : 52
iv)	Copper strip corrosion at 75°C for 24 hours	Negative	Negative	Negative	P : 51
v)	Water content, percent by mass, <i>Max</i>	1.5	1.0	2.0	P : 40
vi)	Free acidity (as oleic acid), percent by mass, <i>Max</i>	0.5	0.5	0.5	P : 53
vii)	Free alkalinity [as $\text{Ca}(\text{OH})_2$], percent by mass, <i>Max</i>	0.25	0.15	0.25	P : 53
viii)	Heat stability at 120°C , for one hour	—	Shall pass the test	—	P : 62 (Method A)
ix)	Low temperature pumping properties	—	Shall pass the test	—	Appendix A
x)	Glycerine content, percent by mass, <i>Max</i>	—	0.25	—	P : †

*Methods of test for petroleum and its products.

†Under preparation. Till such time it is published, ASTM D 128-1977 may be followed.

3.4 Keeping Quality (Shelf Life) — The keeping quality of the material shall be such that when stored in original sealed container, under normal conditions, it shall retain the properties given in the specification for not less than one year from the date of delivery of the product.

*Specification for graphite flake for lubricants (first revision).

†Methods of test for petroleum and its products.

4. PACKING AND MARKING

4.1 Packing — The material shall be supplied in metal drums or other suitable containers of appropriate size and strength to withstand handling during storage and transport.

4.2 Marking — Each container shall be marked with the following information:

- a) Name and grade of the material;
- b) Manufacturer's name, initials or his trade-mark, if any;
- c) Quantity of the contents; and
- d) Year of manufacture.

4.2.1 Each container may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5. SAMPLING

5.1 Representative samples of the material shall be drawn as prescribed in IS : 1457-1966*.

5.2 Criteria for Conformity — Tests for consistency and graphite content shall be done on individual samples and all other tests on composite sample. The lot shall be declared satisfactory only if all individual and composite samples pass the prescribed tests.

A P P E N D I X A

[Table 1, Item (IX)]

DETERMINATION OF LOW TEMPERATURE PUMPING PROPERTIES

A-1. APPARATUS

A-1.1 Grease Gun — Push type (*see* IS : 7794 - 1984†).

A-1.2 Refrigerator — Capable of being maintained at $-18 \pm 1^{\circ}\text{C}$.

*Methods of sampling of petroleum and its products.

†Specification for manual portable grease guns (*first revision*)

A-2. PROCEDURE

A-2.1 Fill the gun with grease and place in a refrigerator at -18°C .

A-2.2 Maintain the test temperature for 24 hours.

A-2.3 Remove the gun from the refrigerator and operate it immediately (*see Note*).

NOTE — Protective gloves should be worn during the test.

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